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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,268	07/07/2003	Ho Sang Sung	2013P093	8221

8791 7590 02/27/2007  
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EXAMINER
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JACKSON, JAKIEDA R

ART UNIT	PAPER NUMBER
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2626

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/27/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/615,268

Applicant(s)

SUNG ET AL.

Examiner

Jakieda R. Jackson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/15/07 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-6 and 8-14** are rejected under 35 U.S.C. 102(e) as being anticipated by Chen (PGPUB 2003/0078769).

Regarding **claims 1 and 8-9**, Chen discloses a speech restoration system and method, hereinafter referenced as a method for concealing packet losses, the system comprising:

a demultiplexer (de-multiplexer) that demultiplexes an input bit stream and divides the input bit stream into several packets (columns 2-3, paragraph 0029);

a packet loss concealing unit that produces and outputs a linear spectrum pair (LSP) coefficient representing the vocal tract of voice and an excitation signal corresponding to a lost frame, when a packet loss occurs (column 3, paragraph 0030 with columns 8-9, paragraphs 0109-0113); and

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a speech restoring unit that synthesizes voice using the packets input from the demultiplexer, outputs the result as restored voice, and synthesizes voice corresponding to a lost packet using the LSP coefficient and the excitation signal input from the packet loss concealing unit and outputs the result as restored voice when the lost packet is detected (columns 3-4, paragraph 0041);

wherein the packet loss concealing unit repeats linear prediction coefficients (LPCs) of a last-received valid frame, produces a first excitation signal for the lost frame using a time scale modification (TSM) method, and outputs the first excitation signal to the speech restoring unit, when the lost frame is voiceless, and produces a second excitation signal by re-estimating a gain parameter based on the first excitation signal and outputs the second excitation signal to the speech restoring unit, when the lost frame is voiced (gain; column 3, paragraph 0033).

Regarding **claims 2 and 10-11**, Chen discloses a system wherein the packet loss concealing unit comprises:

an LSP concealing unit that produces and outputs a LSP coefficient so as to indicate the vocal tract of voice for the lost frame, based on the LSP coefficient of the last-received valid frame (column 3, paragraph 0030);

a determination unit that determines whether voice is voiced or voiceless from a long-period prediction gain of the last-received valid frame, the voice indicated by a code train corresponding to the lost frame (packet loss; column 2, paragraph 0022 with column 3, paragraph 0036); and

an excitation signal concealing unit that performs TSM on an excitation signal produced to replace the lost frame by repeating the LPCs (repeating itself periodically) of the last-received valid frame in order to produce the first excitation signal, when the lost frame is voiceless, and produces the second excitation signal by re-estimating a gain parameter based on the first excitation signal, when the lost frame is voiced (LPC; column 3, paragraphs 0030-0031).

Regarding **claim 3**, Chen discloses a system wherein the determination unit determines whether voice is voiced or voiceless from the long-period prediction gain (long-term predictor) of the last-received valid frame, the voice indicated by a code train corresponding to the lost frame (column 2, paragraph 0026 with column 3, paragraph 0031 and column 4, paragraph 0049).

Regarding **claims 4 and 14**, Chen discloses a system wherein the excitation signal concealing unit comprises:

a TSM unit (column 10, paragraph 0134) that extracts a section having the highest similarity with an excitation signal from a previous excitation signal, and produces the first excitation signal by performing TSM on the extracted section, the excitation signal being produced with respect to the lost frame by repeating the LPCs of the last-received valid frame (column 3, paragraphs 0030-0031 with column 3, paragraphs 0037-0039);

a parameter re-estimator that estimates a codebook gain based on a mean square error between the first excitation signal and a feedback (feedback loop; column

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3, paragraph 0034) of the second excitation signal and produces the second excitation signal; and

a switching unit that selectively outputs one of the first excitation signal input from the TSM unit and the second excitation signal input from the parameter re-estimator, in response to a voiced/voiceless sound determination signal input from the determination unit (switch; column 4, paragraphs 0047-0049).

Regarding **claims 5 and 12**, Chen discloses a system wherein the TSM unit comprises:

modification unit (modified) that extracts a section having the highest similarity (matching) with an excitation signal from a previous excitation signal, sequentially combining the section with the previous excitation signal in units of sub frames, using an overlap-add method (overlap-adds), and produces a third excitation signal, the excitation signal being produced with respect to the lost frame by repeating the LPCs of the last-received valid frame (column 3, paragraphs 0037-0039 with column 6, paragraphs 0081-0084 and column 10, paragraph 0135); and

a first estimating unit that synthesizes the third excitation signal using an LPC and produces the first excitation signal (column 3, paragraphs 0037-0039).

Regarding **claims 6 and 13**, Chen discloses a system wherein the modification unit comprises a dynamic buffer in which the excitation signal and the previous excitation signal are dynamically stored, the excitation signal being produced with respect to the lost frame by repeating the LPCs of the last-received valid frame (buffer; column 4, paragraphs 0047-0049).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 7 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Aguilar et al. (USPN 6,691,082), hereinafter referenced as Aguilar.

Regarding **claims 7 and 15**, Chen discloses a system wherein the parameter re-estimator comprises:

an error calculator that calculates a mean square error between the first excitation signal input from the TSM unit and the feedback (feedback loop; column 3, paragraph 0034) of the second excitation signal and produces a gain control signal for re-estimation of the gain parameter (columns 8-9, paragraphs 0109-0113);

a vector estimator that estimates the gain control signal, codebook gains of an adaptive codebook (ACB) vector (column 2, paragraph 0025 with column 3, paragraph 0032); and

a second estimating unit that synthesizes the fourth excitation signal using a LPC and produces the second excitation signal (LPC; column 3, paragraph 0030), but does not specifically teach a fixed codebook (FCB) vector that combines the estimated ACB gain with the estimated FCB gain, and produces a fourth excitation signal.

Aguilar discloses a system comprising:

an error calculator that calculates a mean square error (VMSE) between the first excitation signal input from the TSM unit and the feedback of the second excitation signal and produces a gain control signal for re-estimation of the gain parameter (column 22, lines 56-60 with column 24, line 58 – column 25, line 28 and column 23, lines 57-67 and column 26, lines 29-47);

a vector estimator that estimates the gain control signal, codebook gains of an adaptive codebook (ACB) vector (adaptive codebook vector) and a fixed codebook (FCB) vector (fixed codebook vector), combines the estimated ACB gain with the estimated FCB gain, and produces a fourth excitation signal (column 3, lines 48-65 with column 5, lines 41-55; and

a second estimating unit that synthesizes the fourth excitation signal using a LPC (LPC; column 13, lines 41-65 with column 14, lines 12-27) and produces the second excitation signal, to efficiently perform speech analysis and synthesis as well as coding.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen's system wherein it combines the estimated ACB gain with the estimated FCB gain, and produces a fourth excitation signal, as taught by Aguilar, for achieving high quality synthetic speech (column 1, lines 14-25).

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



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- Wah et al. (USPN 6,754,203) disclose a method and program product for organizing data into packets.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jakieda R. Jackson whose telephone number is 571.272.7619. The examiner can normally be reached on Monday through Friday from 7:30 a.m. to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571.272.7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRJ  
February 18, 2007

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A handwritten signature in black ink, appearing to read "David R. Hudspeth". The signature is fluid and cursive, with a prominent initial "D".

**DAVID HUDSPETH**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**